



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/677,182	10/02/2003	Jee-Soo Mok	LEPA121687	8329

26389 7590 05/24/2005

CHRISTENSEN, O'CONNOR, JOHNSON, KINDNESS, PLLC
1420 FIFTH AVENUE
SUITE 2800
SEATTLE, WA 98101-2347

EXAMINER

AHMED, SHAMIM

ART UNIT PAPER NUMBER

1765

DATE MAILED: 05/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/677,182

Applicant(s)

MOK ET AL.

Examiner

Shamim Ahmed

Art Unit

1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 October 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because it is presented as more than one paragraph. Abstract should be in single paragraph and may not exceed 150 words in length. Correction is required. See MPEP § 608.01(b) [R-2].

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

3. Claims 7-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
4. Regarding claim 7, lines 4-5, the phrase "a multilayer printed circuit board fabricated in a parallel manner" renders the claim indefinite because it is unclear what is meant by "a parallel manner".

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

Art Unit: 1765

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamayachi et al (4,943,516) in view of Wolski et al (5,447,619).

Kamayachi et al disclose a process of forming a solder resist pattern on a printed circuit board (col.1, lines 7-20), wherein the process including the steps of:

- laminating or depositing a thermosetting resin on a printed circuit board (PCB) having circuits formed thereon, wherein the resin can be in a wet or dry state (semi-cured);
- the coating is then directly exposed to a laser beam through a photomask having a prescribed pattern;
- post-curing the developed thermosetting resin pattern to form solder resist pattern (col.15, line 67-col.16, line 31).

Kamayachi et al remain silent about the pre-treating the printed circuit board before lamination step.

However, Wolski et al teach that it widely accepted practice in the manufacturing of printed circuit board (PCB) to pretreat or clean or microetch the circuit board using abrasion, scrubbing or chemical means for increasing bonding capability between the

Art Unit: 1765

circuit patterns in the copper-clad laminate and polymeric resist material (col.4, lines 52-col.5, lines 14).

Therefore, it would have been obvious to one of ordinary skilled in the art at the time of claimed invention to combine Wolski et al's teaching into Kamayachi et al's process for increasing bonding capability between the circuit patterns in the copper-clad laminate and polymeric resist material as taught by Wolski et al.

8. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paulus (5,626,774) in view of Wolski et al (5,447,619).

Paulus discloses a process of forming solder resist mask on the surface of a multilayered printed circuit board, wherein both side of a copper foil is laminated with a partially cured thermosetting resin, which is then irradiating or ablated with laser through an etch resist mask (col.1, lines 62-col.2, lines 14 and col.3, lines 5-11).

Paulus remains silent about the pre-treating the printed circuit board before lamination step.

However, Wolski et al teach that it widely accepted practice in the manufacturing of printed circuit board (PCB) to pretreat or clean or microetch the circuit board using abrasion, scrubbing or chemical means for increasing bonding capability between the circuit patterns in the copper-clad laminate and polymeric resist material (col.4, lines 52-col.5, lines 14).

Therefore, it would have been obvious to one of ordinary skilled in the art at the time of claimed invention to combine Wolski et al's teaching into Kamayachi et al's

Art Unit: 1765

process for increasing bonding capability between the circuit patterns in the copper-clad laminate and polymeric resist material as taught by Wolski et al.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nakamura et al (6,221,972) disclose a process of forming photosensitive thermosetting resin on a printed circuit board and the coated resin film is irradiated with laser beam in order to form solder resist and then heat treating the developed resist pattern for curing the coated solder resist pattern (col.7, lines 22-47).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shamim Ahmed whose telephone number is (571) 272-1457. The examiner can normally be reached on M-Thu (7:00-5:30) Every Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine G. Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1765

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Shamim Ahmed
Primary Examiner
Art Unit 1765

SA
May 17, 2005